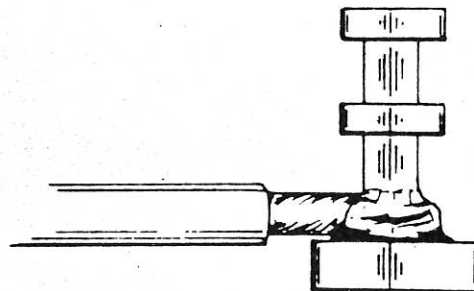
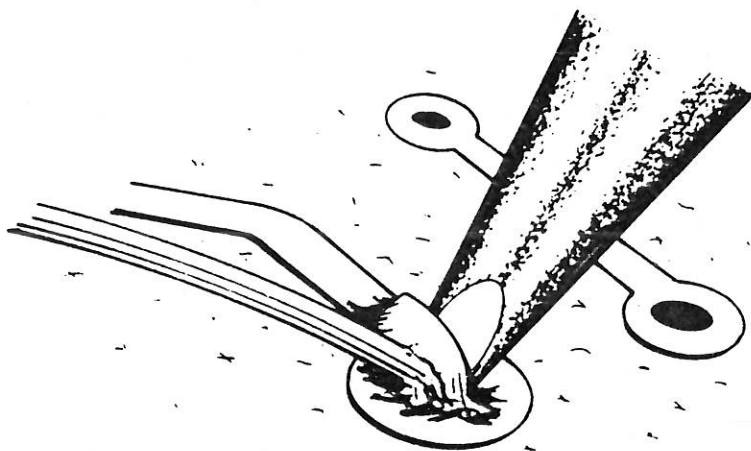
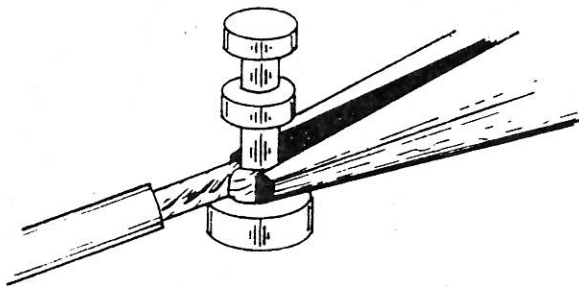


Wiring & Soldering Handbook



OMNI TRAINING CORP

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***Wiring & Soldering
Handbook***

**The STANDARD
of the Industry**



THIS TRAINING HANDBOOK HAS BEEN DESIGNED TO PROVIDE YOU WITH STEP BY STEP DIRECTIONS ON HOW TO EFFECTIVELY ASSEMBLE, SOLDER AND INSPECT ELECTRONIC EQUIPMENT. TRAINING WILL PROMOTE PRODUCTIVITY, PRODUCT QUALITY AND MINIMIZE REWORK AND MATERIAL SCRAP.

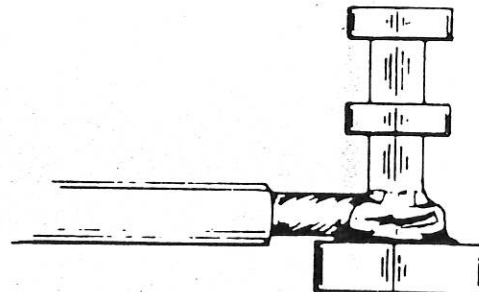
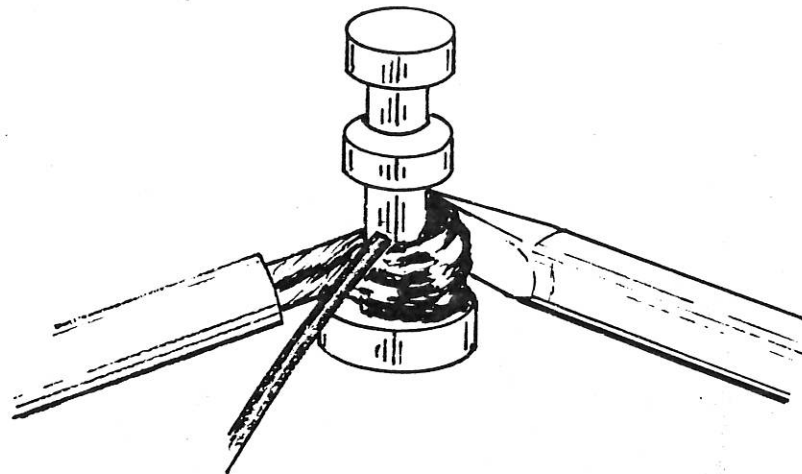
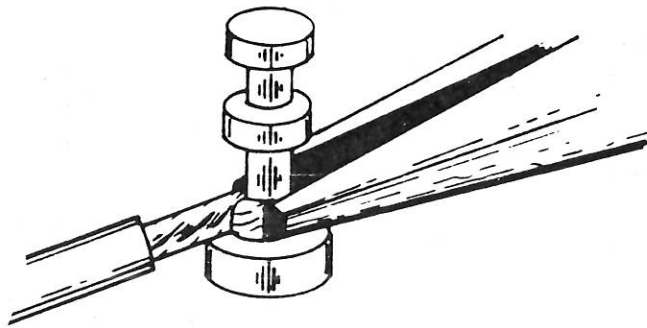
I HEAR AND I FORGET.
I SEE AND I REMEMBER.
I DO AND I UNDERSTAND.

YOUR DEDICATION AND APPLICATION TO THIS TRAINING COURSE WILL DETERMINE THE QUALITY OF THE PRODUCT YOUR COMPANY MANUFACTURES.

YOUR COMPANY IS TRAINING YOU BECAUSE THEY ARE AWARE THAT "PEOPLE ARE A COMPANY'S GREATEST RESOURCE."

Wiring & Soldering Handbook

TURRET TERMINALS

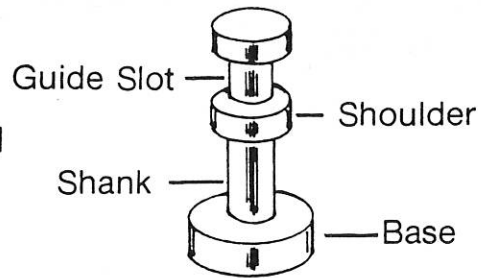


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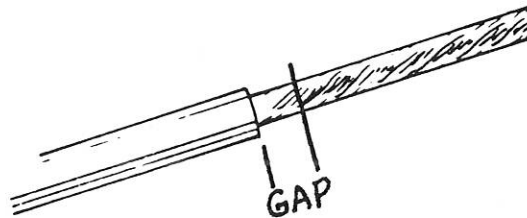
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WIRING & SOLDERING TURRET TERMINALS

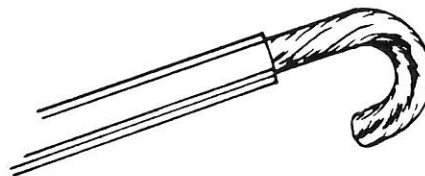
TURRET TERMINAL DESCRIPTION



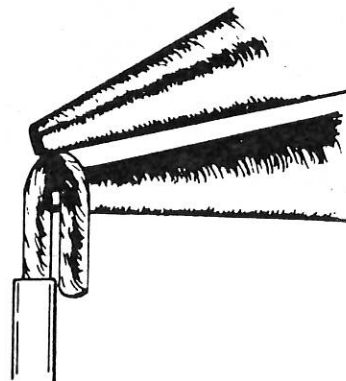
SELECT A WIRE WHICH HAS BEEN PROPERLY STRIPPED, TWISTED AND TINNED.



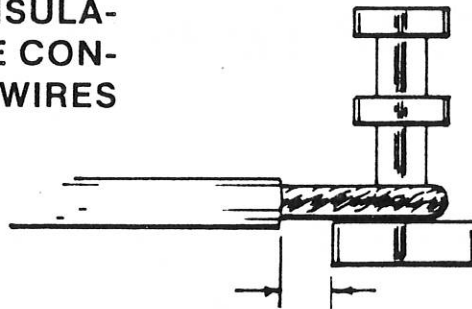
PREFORM THE WIRE TO A HOOK CONFIGURATION



SHAPE THE WIRE AROUND THE BLADES OF ROUND NOSE PLIERS. DO NOT DAMAGE THE WIRE STRANDS DURING THE OPERATION.

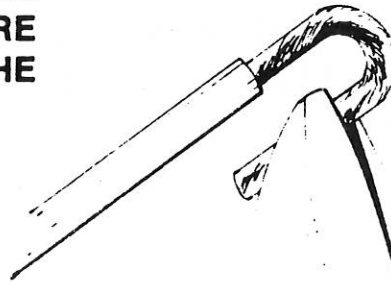


ALLOW FOR PROPER INSULATION CLEARANCE OF 1 TO 1½ INSULATION DIAMETERS. THIS PREVENTS INSULATION FROM MELTING INTO THE CONNECTION OR ADJACENT BARE WIRES FROM SHORTING.

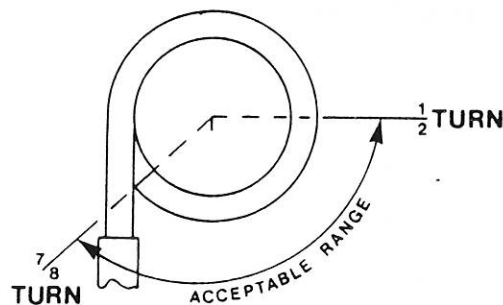


1-1½ INSULATION DIAMETERS

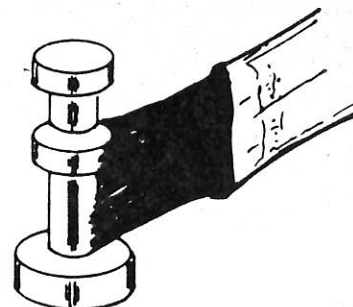
CUT OFF EXCESSIVE WIRE WITH WIRE CUTTERS, ALLOWING ENOUGH WIRE FOR A PROPER WRAP AROUND THE TERMINAL SHANK.



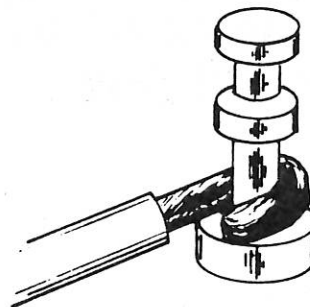
THE ACCEPTABLE RANGE FOR WIRE TERMINATION IS FROM 1/2 TURN MINIMUM TO 7/8 TURN MAXIMUM.



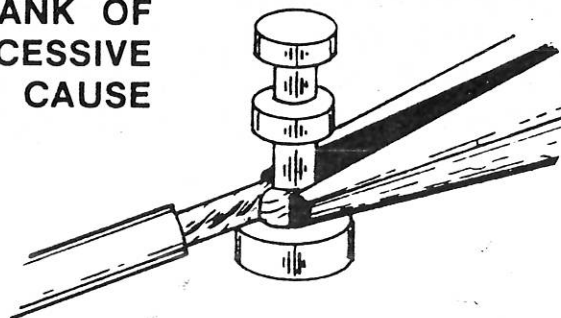
PRIOR TO INSTALLING THE WIRE, CLEAN THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH TO REMOVE CONTAMINANTS DEPOSITED DURING STORAGE OR HANDLING.



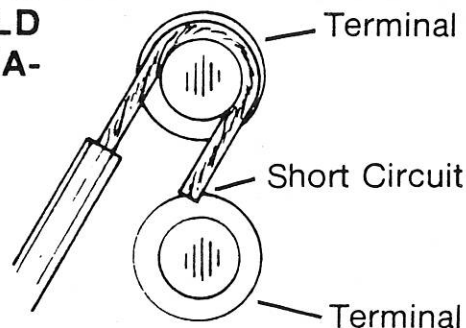
PLACE PREPARED WIRE INTO POSITION ON THE TERMINAL.



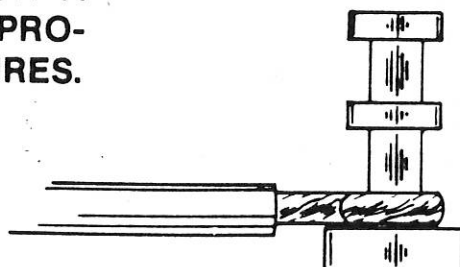
USING LONG NOSE PLIERS, GENTLY SQUEEZE LOOSE END OF WIRE TIGHTLY AGAINST THE SHANK OF THE TERMINAL. AVOID EXCESSIVE PRESSURE WHICH WOULD CAUSE DAMAGE TO WIRE STRANDS.



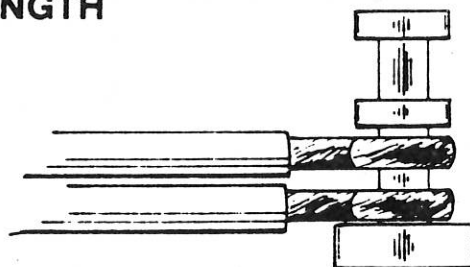
THE END OF THE WIRE MUST BE CONTAINED WITHIN THE BASE AREA AS PROJECTING WIRE ENDS COULD CAUSE SHORTING BETWEEN ADJACENT TERMINALS.



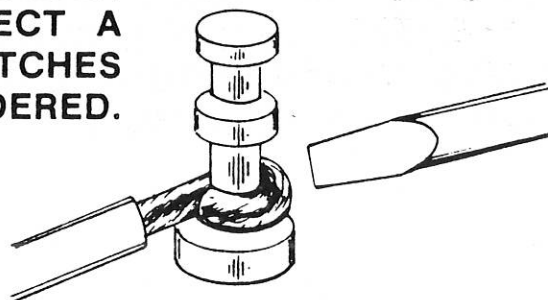
THE WIRE SHOULD BE FLAT TO THE BASE OF THE TERMINAL FOR THE ENTIRE WRAP. THIS ALLOWS FOR A RELIABLE CONNECTION, AND PROVIDES ROOM FOR ADDITIONAL WIRES.



WHEN INSTALLING MULTIPLE WIRES ON A TERMINAL, ALL WIRES SHOULD BE PARALLEL TO THE BASE. INSULATION CLEARANCE AND WRAP LENGTH SHOULD BE THE SAME.



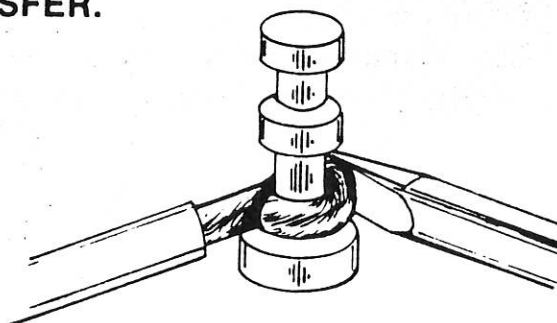
WITH WIRE OR WIRES PROPERLY IN POSITION THE CONNECTION IS READY TO BE SOLDERED. TO SOLDER SAFELY AND QUICKLY, SELECT A SOLDERING IRON TIP THAT MATCHES THE CONNECTION TO BE SOLDERED.



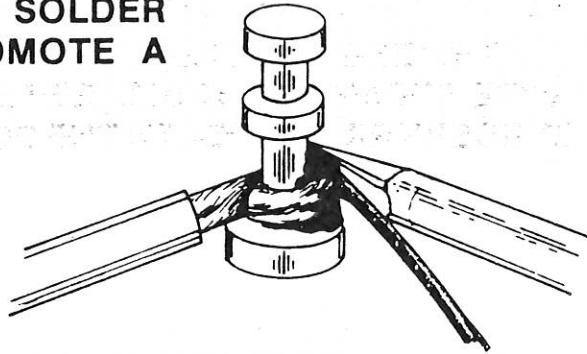
REMOVE THE SOLDERING IRON FROM HOLDER, AND WIPE THE TIP ON A CLEAN, WET, CELLULOSE SPONGE.



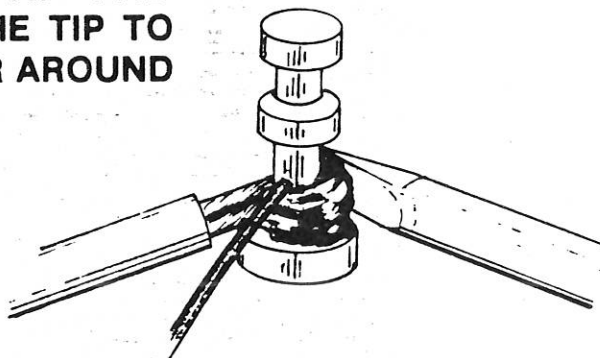
PLACE THE TIP ON THE CONNECTION WITH MAXIMUM CONTACT TO ACHIEVE A RAPID HEAT TRANSFER.



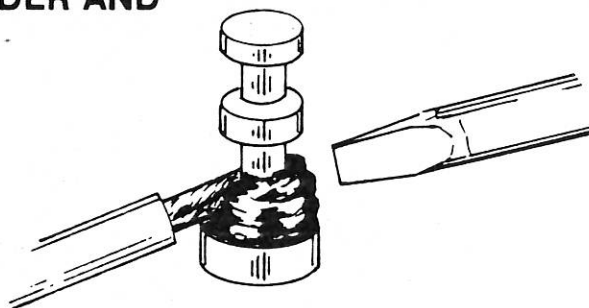
MELT A SMALL AMOUNT OF SOLDER AT THE JUNCTION OF THE TIP AND THE WORK TO FORM A SOLDER BRIDGE, WHICH WILL PROMOTE A RAPID HEAT TRANSFER.



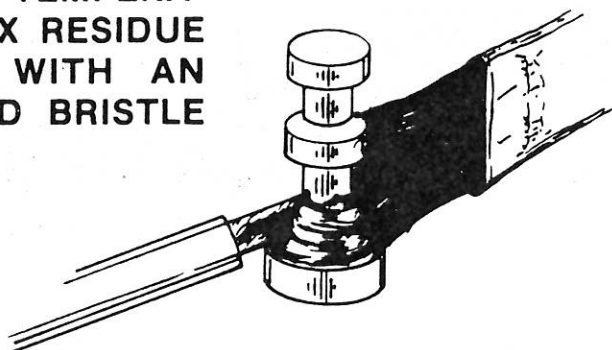
THEN, IMMEDIATELY PLACE THE SOLDER OPPOSITE THE TIP AND ALLOW THE HEAT FROM THE TIP TO DRAW THE MOLTEN SOLDER AROUND THE TERMINAL.



AS SOON AS THE SOLDER HAS FORMED A CONTINUOUS FILLET AROUND THE TERMINAL, REMOVE THE SOLDER AND TIP FROM THE TERMINAL.



ALLOW THE CONNECTION TO SOLIDIFY AND COOL TO ROOM TEMPERATURE. REMOVE THE FLUX RESIDUE FROM THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH.



THE COMPLETED CONNECTION SHOULD BE SMOOTH, BRIGHT, AND SHINY, WITH THE SOLDER FLOWING TO THE EDGE OF THE TERMINAL. THE WIRE STRANDS SHOULD BE READILY DISCERNIBLE BENEATH THE SOLDER.



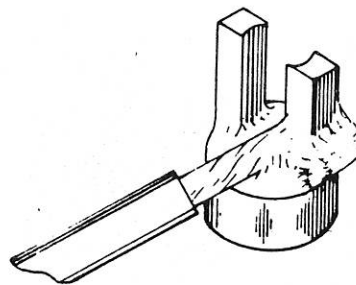
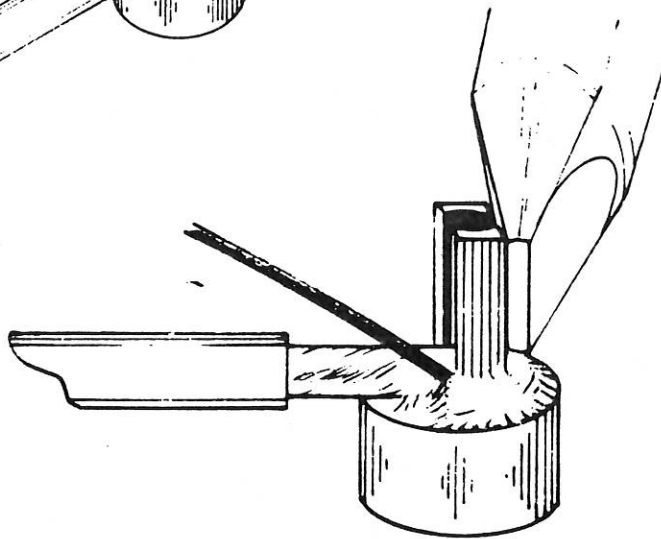
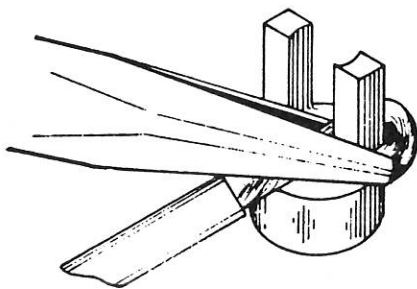
BY FOLLOWING THESE STEP-BY-STEP INSTRUCTIONS, YOU SHOULD BE ABLE TO CONSISTENTLY PRODUCE ACCEPTABLE CONNECTIONS. INSPECTION CRITERIA HAS BEEN PROVIDED WHICH ALLOWS YOU TO COMPARE YOUR WORKMANSHIP WITH INDUSTRY STANDARDS. THE CONNECTION ON THE LEFT SHOWS MINIMUM SOLDER, CENTER CONNECTION HAS THE OPTIMUM AMOUNT, AND THE RIGHT CONNECTION HAS THE MAXIMUM AMOUNT.



YOUR DEDICATION TO QUALITY WORKMANSHIP REFLECTS THE QUALITY OF THE PRODUCTS YOUR COMPANY MANUFACTURES.

Wiring & Soldering Handbook

BIFURCATED TERMINALS



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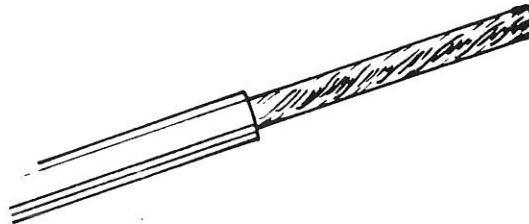
NOTES

WIRING & SOLDERING BIFURCATED TERMINALS

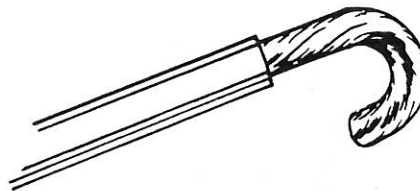
ASSORTMENT OF BIFURCATED
TERMINALS



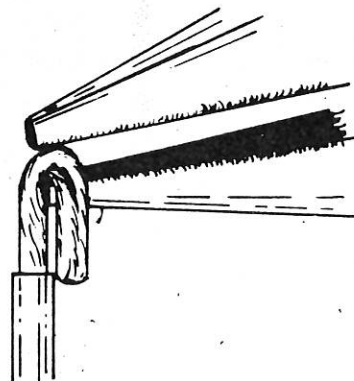
SELECT A WIRE WHICH HAS BEEN
PROPERLY STRIPPED, TWISTED, AND
TINNED.



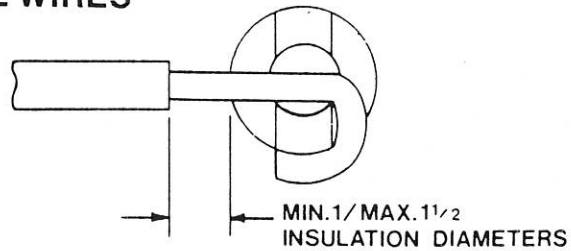
PREFORM THE WIRE TO A HOOK
CONFIGURATION.



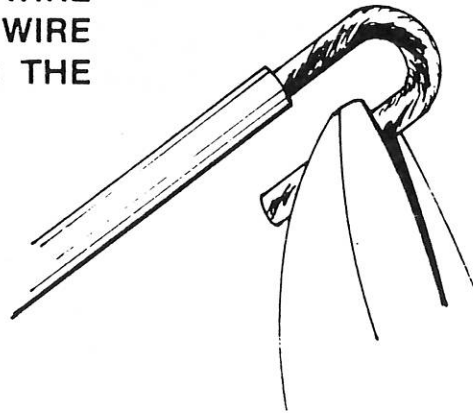
SHAPE THE WIRE AROUND THE
BLADES OF ROUND NOSE PLIERS. DO
NOT DAMAGE THE WIRE STRANDS
DURING THE OPERATION.



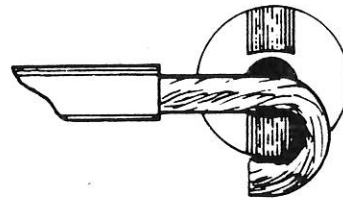
ALLOW FOR PROPER INSULATION CLEARANCE OF 1 TO 1½ INSULATION DIAMETERS. THIS PREVENTS INSULATIONS FROM MELTING INTO THE CONNECTIONS OR ADJACENT BARE WIRES FROM SHORTING.



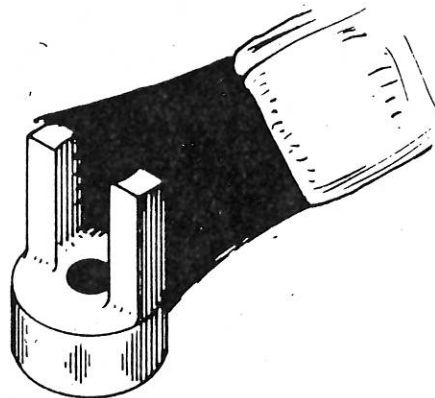
CUT OFF EXCESSIVE WIRE WITH WIRE CUTTERS, ALLOWING ENOUGH WIRE FOR A PROPER WRAP AROUND THE TERMINAL.



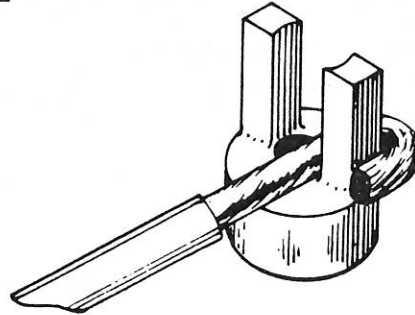
THE ACCEPTABLE WIRE WRAP IS FOR THE WIRE TO HAVE A DOUBLE 90° BEND AND THE END OF THE WIRE CUT OFF FLUSH WITH THE FRONT FACE OF THE VERTICAL POST.



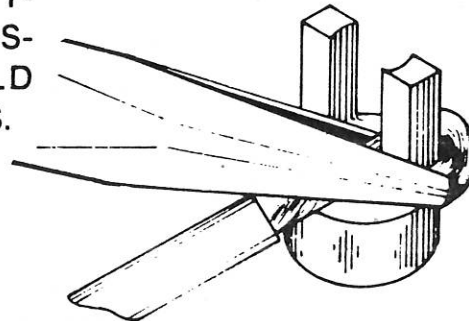
PRIOR TO INSTALLING THE WIRE, CLEAN THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH TO REMOVE CONTAMINATES DEPOSITED DURING STORAGE OR HANDLING.



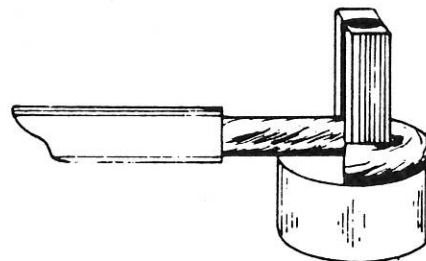
POSITION THE FORMED WIRE OVER EITHER OF THE POSTS ON THE TERMINAL.



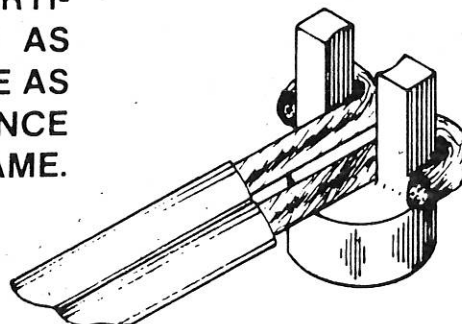
USING LONG NOSE PLIERS, GENTLY SQUEEZE THE WIRE TIGHTLY AGAINST BOTH THE INSIDE AND OUTSIDE OF THE TERMINAL. AVOID EXCESSIVE PRESSURE WHICH WOULD CAUSE DAMAGE TO WIRE STRANDS.



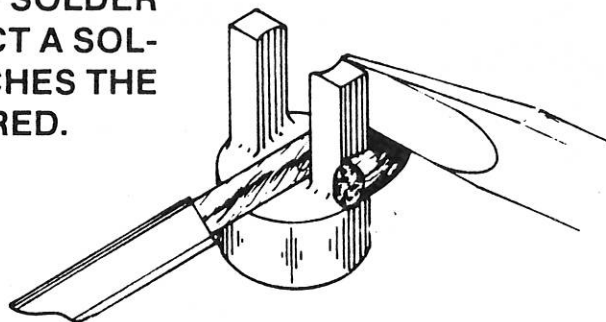
IT IS IMPORTANT THAT THE WIRE BE FLAT TO, AND IN CONTACT WITH, THE TOP OF THE TERMINAL BASE FOR THE ENTIRE LENGTH OF THE WRAP.



ADDITIONAL WIRES SHALL BE WRAPPED TO ALTERNATING VERTICAL POSTS AND BE WRAPPED AS CLOSE TO THE PRECEEDING WIRE AS POSSIBLE. INSULATION CLEARANCE OF ALL WIRES SHOULD BE THE SAME.



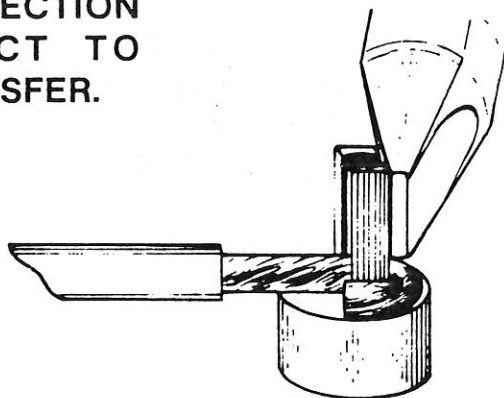
WITH WIRE OR WIRES PROPERLY IN POSITION, THE CONNECTION IS READY TO BE SOLDERED. TO SOLDER SAFELY AND QUICKLY, SELECT A SOLDERING IRON TIP THAT MATCHES THE CONNECTION TO BE SOLDERED.



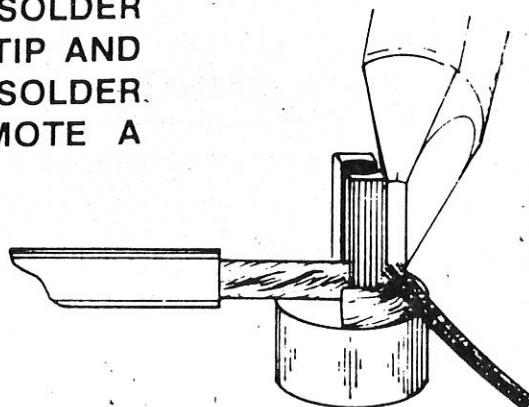
REMOVE THE SOLDERING IRON FROM THE HOLDER AND WIPE THE TIP ON A CLEAN, WET, CELLULOSE SPONGE.



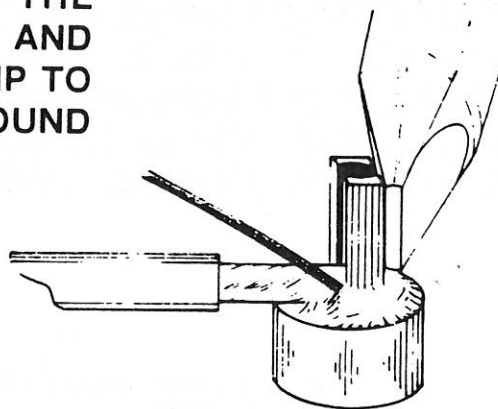
PLACE THE TIP ON THE CONNECTION WITH MAXIMUM CONTACT TO ACHIEVE A RAPID HEAT TRANSFER.



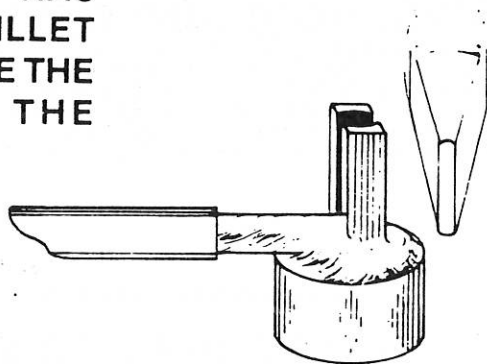
MELT A SMALL AMOUNT OF SOLDER AT THE JUNCTION OF THE TIP AND THE WORK TO FORM A SOLDER BRIDGE WHICH WILL PROMOTE A RAPID HEAT TRANSFER.



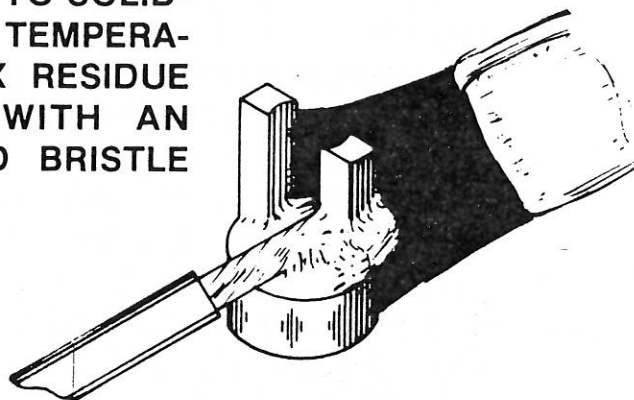
THEN IMMEDIATELY PLACE THE SOLDER OPPOSITE THE TIP AND ALLOW THE HEAT FROM THE TIP TO DRAW THE MOLTEN SOLDER AROUND THE TERMINAL.



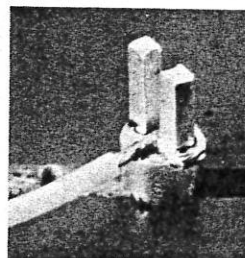
AS SOON AS THE SOLDER HAS FORMED A CONTINUOUS FILLET AROUND THE TERMINAL, REMOVE THE SOLDER AND TIP FROM THE TERMINAL.



ALLOW THE CONNECTION TO SOLIDIFY AND COOL TO ROOM TEMPERATURE. REMOVE THE FLUX RESIDUE FROM THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH.



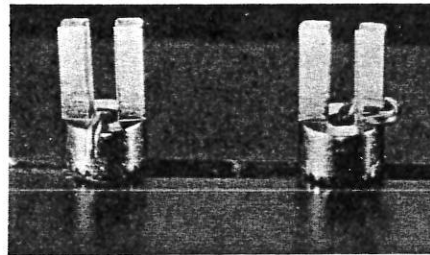
THE COMPLETED CONNECTION SHOULD BE SMOOTH, BRIGHT, AND SHINY, WITH THE SOLDER FLOWING TO THE EDGE OF THE TERMINAL. THE WIRE STRANDS SHOULD BE READILY DISCERNIBLE BENEATH THE SOLDER.



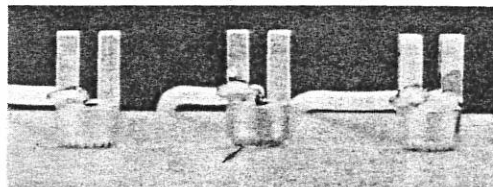
THERE ARE TWO OTHER ALTERNATE METHODS OF ATTACHING WIRES TO BIFURCATED TERMINALS. THE TOP ROUTE WHERE THE WIRE APPROACHES FROM ABOVE AND IS SOLDERED BETWEEN THE TWO VERTICAL POSTS.



THE BOTTOM ROUTE WHERE THE WIRE APPROACHES FROM THE SIDE OF THE ASSEMBLY OPPOSITE THE TERMINAL, RUNS THROUGH THE HOLE, AND IS WRAPPED AND SOLDERED TO EITHER THE BASE OR VERTICAL POST.



BY FOLLOWING THESE STEP-BY-STEP INSTRUCTIONS, YOU SHOULD BE ABLE TO CONSISTENTLY PRODUCE ACCEPTABLE CONNECTIONS. INSPECTION CRITERIA HAS BEEN PROVIDED WHICH ALLOWS YOU TO COMPARE YOUR WORKMANSHIP WITH INDUSTRY STANDARDS. THE CONNECTION ON THE LEFT SHOWS MINIMUM SOLDER, CENTER CONNECTION HAS THE OPTIMUM AMOUNT, AND THE RIGHT CONNECTION HAS THE MAXIMUM AMOUNT.

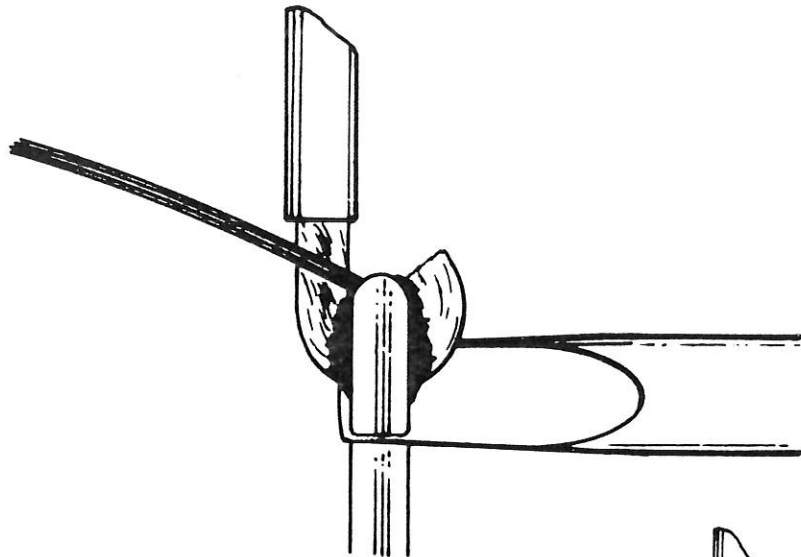
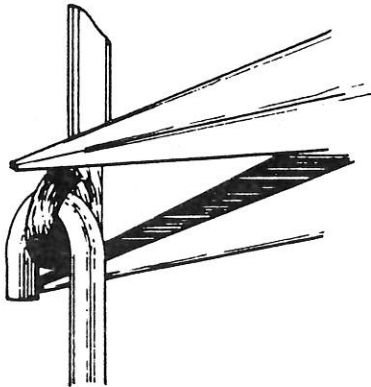


YOUR DEDICATION TO QUALITY WORKMANSHIP REFLECTS THE QUALITY OF THE PRODUCTS YOUR COMPANY MANUFACTURES.

NOTES

Wiring & Soldering Handbook

HOOK TERMINALS

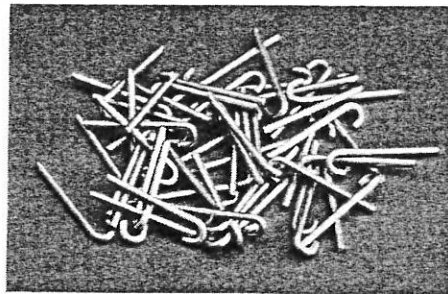


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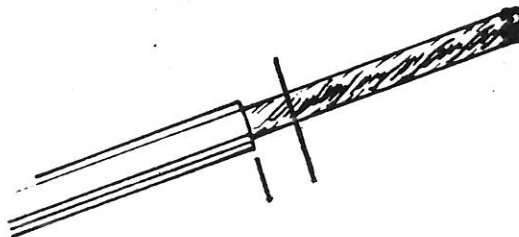
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WIRING & SOLDERING HOOK TERMINALS

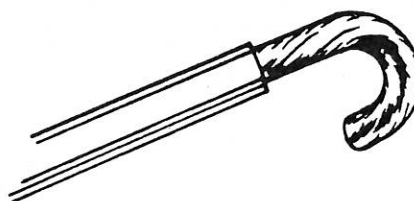
ASSORTMENT OF HOOK TERMINALS



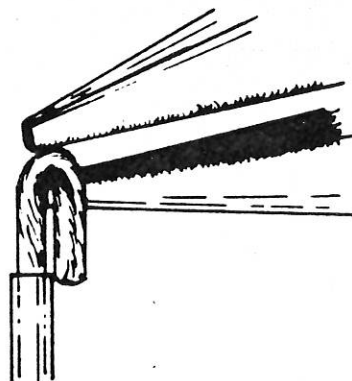
SELECT A WIRE WHICH HAS BEEN
PROPERLY STRIPPED, TWISTED, AND
TINNED.



PREFORM THE WIRE TO A HOOK
CONFIGURATION.



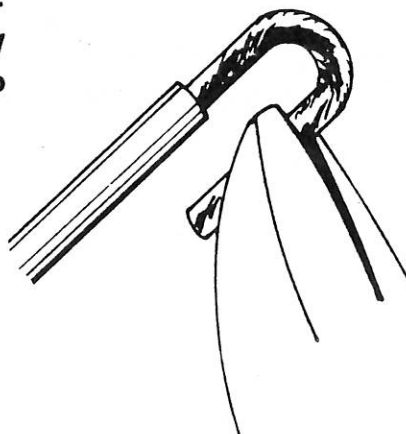
SHAPE THE WIRE AROUND THE
BLADES OF ROUND NOSE PLIERS. DO
NOT DAMAGE THE WIRE STRANDS
DURING THE OPERATION.



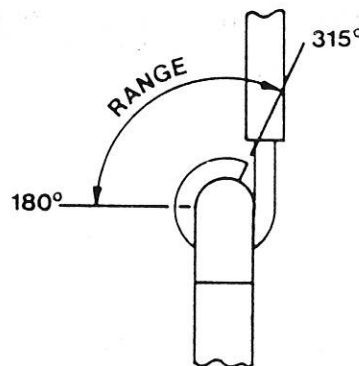
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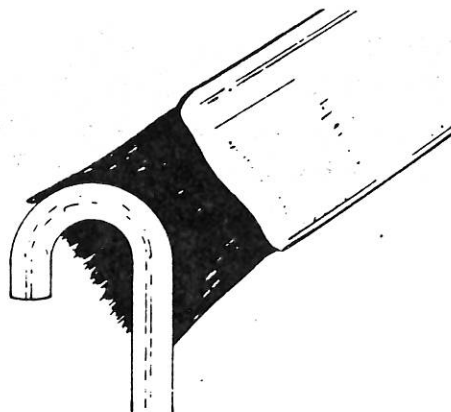
USING WIRE CUTTERS, CUT OFF EXCESSIVE WIRE LENGTH. ALLOW ENOUGH WIRE FOR A PROPER WRAP AROUND THE TERMINAL.



THE WIRE OR WIRES MAY APPROACH THE TERMINAL FROM ANY DIRECTION, MUST PASS THROUGH THE EYE, AND FROM THE POINT WHERE THE WIRE FIRST TOUCHES THE TERMINAL, MUST BE WRAPPED A MINIMUM OF ½ TURN TO A MAXIMUM OF ¾ TURN.



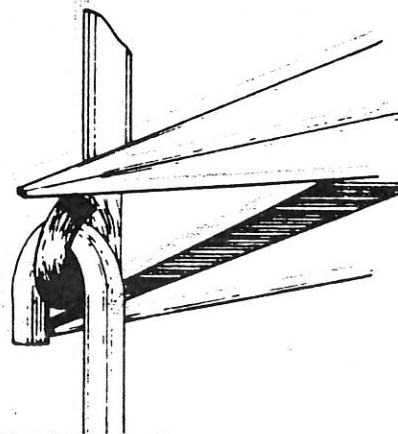
PRIOR TO INSTALLING THE WIRE, CLEAN THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH TO REMOVE CONTAMINATES DEPOSITED DURING STORAGE OR HANDLING.



PLACE PREPARED WIRE INTO POSITION ON THE TERMINAL.



USING LONG NOSE PLIERS, GENTLY SQUEEZE LOOSE END OF WIRE TIGHTLY AGAINST THE TERMINAL. AVOID EXCESSIVE PRESSURE WHICH WOULD CAUSE DAMAGE TO WIRE STRANDS.



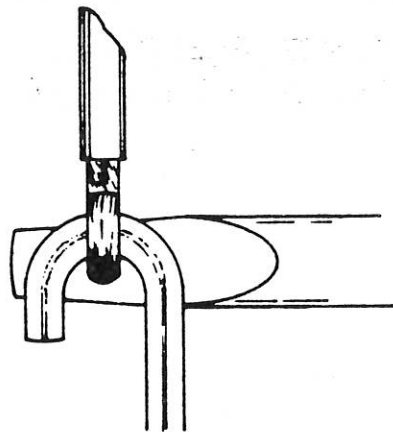
THE WIRE SHOULD BE STRAIGHT AND TIGHT ON THE TERMINAL FOR THE ENTIRE WRAP. THIS ALLOWS FOR A RELIABLE CONNECTION, AND PROVIDES ROOM FOR ADDITIONAL WIRES.



ADDITIONAL WIRES MAY BE WRAPPED IN THE SAME OR OPPOSING DIRECTION AS THE FIRST. THEY SHOULD BE WRAPPED AS CLOSE AS POSSIBLE TO THE PRECEEDING WIRE. INSULATION CLEARANCE AND WRAP LENGTH SHOULD BE THE SAME.



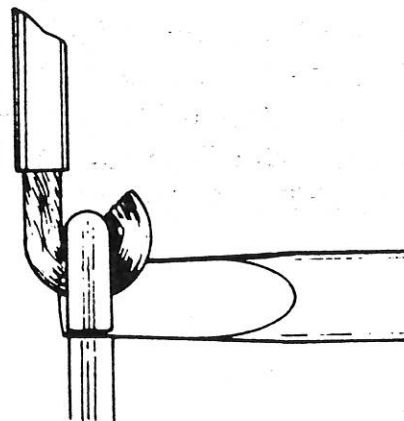
WITH WIRE OR WIRES PROPERLY IN POSITION, THE CONNECTION IS READY TO BE SOLDERED. TO SOLDER SAFELY AND QUICKLY, SELECT A SOLDERING IRON TIP THAT MATCHES THE CONNECTION TO BE SOLDERED.



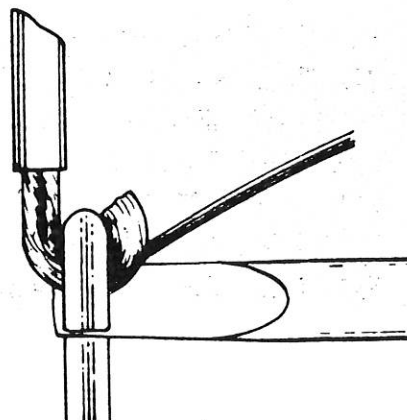
REMOVE THE SOLDERING IRON FROM THE HOLDER AND WIPE THE TIP ON A CLEAN, WET, CELLULOSE SPONGE.



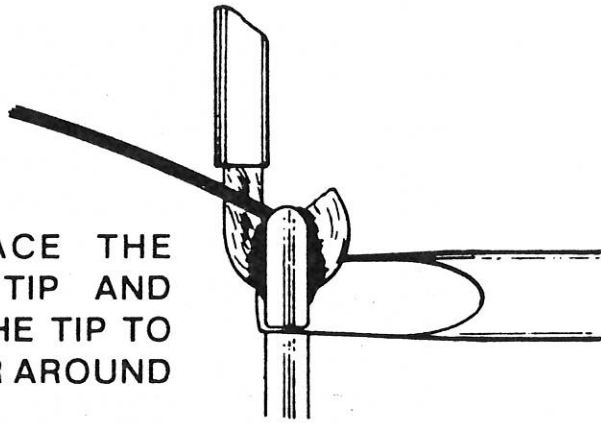
PLACE THE TIP ON THE CONNECTION WITH MAXIMUM CONTACT TO ACHIEVE A RAPID HEAT TRANSFER.



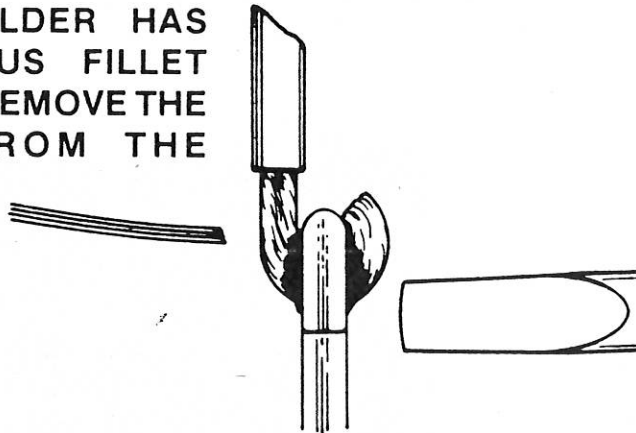
MELT A SMALL AMOUNT OF SOLDER AT THE JUNCTION OF THE TIP AND THE WORK TO FORM A SOLDER BRIDGE, WHICH WILL PROMOTE A RAPID HEAT TRANSFER.



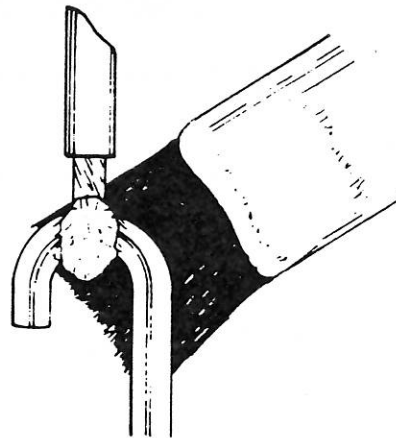
THEN IMMEDIATELY PLACE THE SOLDER OPPOSITE THE TIP AND ALLOW THE HEAT FROM THE TIP TO DRAW THE MOLTEN SOLDER AROUND THE TERMINAL.



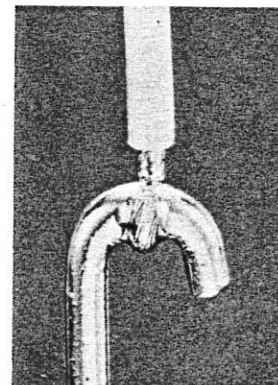
AS SOON AS THE SOLDER HAS FORMED A CONTINUOUS FILLET AROUND THE TERMINAL, REMOVE THE SOLDER AND TIP FROM THE TERMINAL.



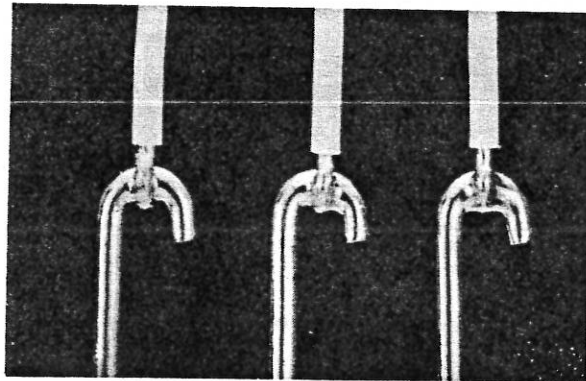
ALLOW THE CONNECTION TO SOLIDIFY AND COOL TO ROOM TEMPERATURE. REMOVE THE FLUX RESIDUE FROM THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH.



THE COMPLETED CONNECTION SHOULD BE SMOOTH, BRIGHT, AND SHINY, WITH THE SOLDER FLOWING AND WETTING TO THE TERMINAL. THE WIRE STRANDS SHOULD BE READILY DISCERNIBLE BENEATH THE SOLDER.



BY FOLLOWING THESE STEP-BY-STEP INSTRUCTIONS, YOU SHOULD BE ABLE TO CONSISTENTLY PRODUCE ACCEPTABLE CONNECTIONS. INSPECTION CRITERIA HAS BEEN PROVIDED WHICH ALLOWS YOU TO COMPARE YOUR WORKMANSHIP WITH INDUSTRY STANDARDS. THE CONNECTION ON THE LEFT SHOWS MINIMUM SOLDER, CENTER CONNECTION HAS THE OPTIMUM AMOUNT, AND THE RIGHT CONNECTION HAS THE MAXIMUM AMOUNT.

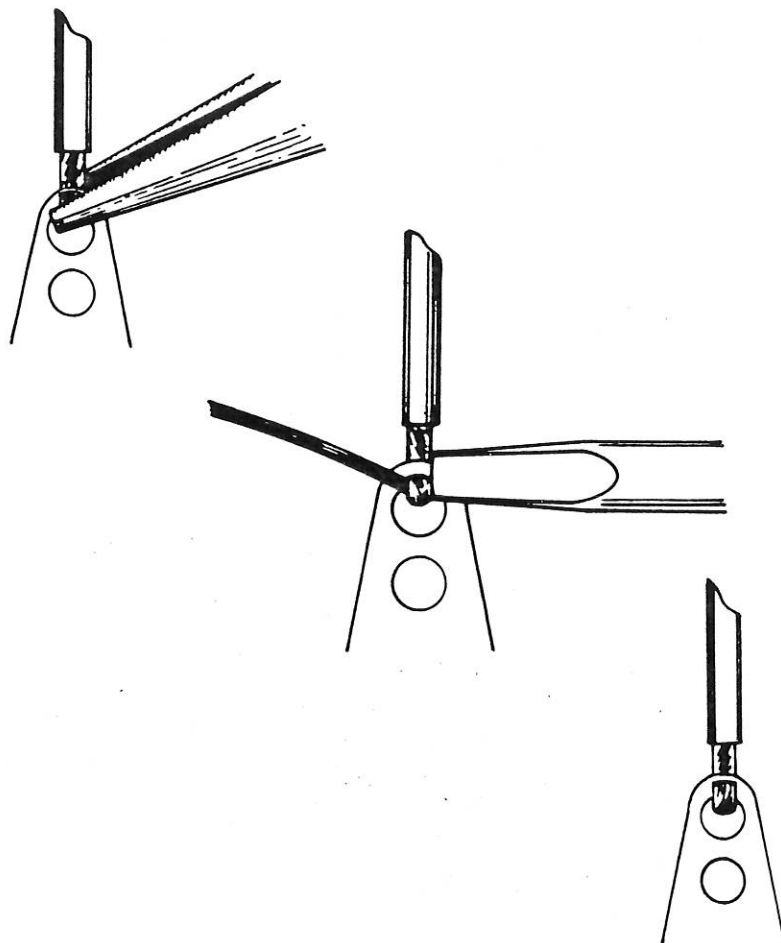


YOUR DEDICATION TO QUALITY WORKMANSHIP REFLECTS THE QUALITY OF THE PRODUCTS YOUR COMPANY MANUFACTURES.

NOTES

Wiring & Soldering Handbook

PIERCED TERMINALS

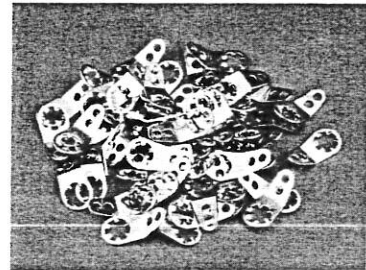


OMNI TRAINING CORP

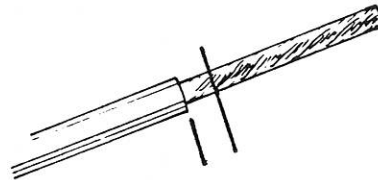
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WIRING & SOLDERING PIERCED TERMINALS

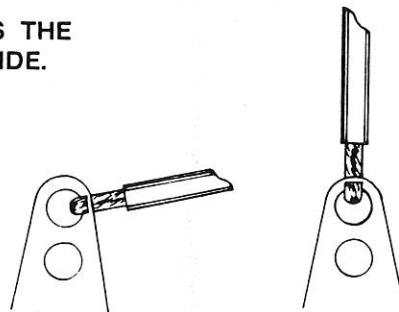
**ASSORTMENT OF
PIERCED TERMINALS**



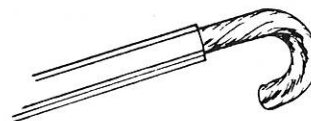
**SELECT A WIRE WHICH HAS BEEN
PROPERLY STRIPPED, TWISTED, AND
TINNED.**



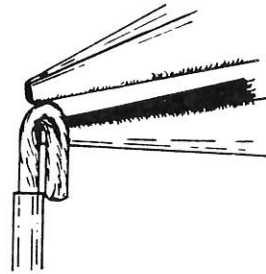
**WHEN THE WIRE APPROACHES THE
TERMINAL FROM THE TOP OR SIDE.**



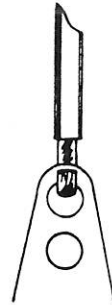
**PREFORM THE WIRE TO A HOOK
CONFIGURATION.**



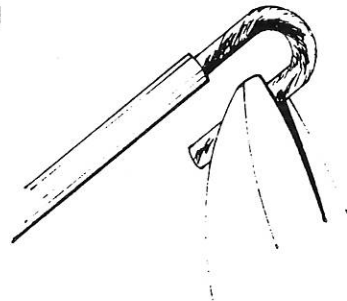
**SHAPE THE WIRE AROUND THE
BLADES OF ROUND NOSE PLIERS. DO
NOT DAMAGE THE WIRE STRANDS
DURING THE OPERATION.**



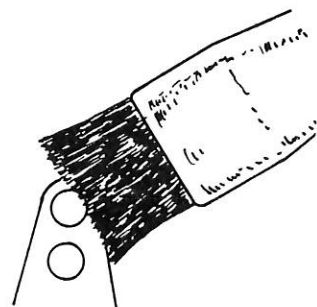
**ALLOW FOR PROPER INSULATION
CLEARANCE OF 1 TO 1½ INSULATION
DIAMETERS. THIS PREVENTS INSULA-
TIONS FROM MELTING INTO THE CON-
NECTION OR ADJACENT BARE WIRES
FROM SHORTING.**



**CUT OFF EXCESSIVE WIRE LENGTH
WITH WIRE CUTTERS.**



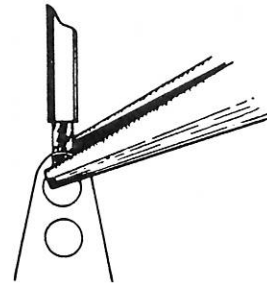
**PRIOR TO INSTALLING THE WIRE,
CLEAN THE TERMINAL WITH AN
APPROVED SOLVENT AND BRISTLE
BRUSH TO REMOVE CONTAMINATES
DEPOSITED DURING STORAGE OR
HANDLING.**



**PASS THE WIRE THROUGH THE EYE OF
THE TERMINAL AND HOLD IN PLACE.**



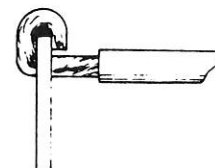
**USING LONG NOSE PLIERS, GENTLY
SQUEEZE WIRE TIGHTLY AGAINST
THE TERMINAL. AVOID EXCESSIVE
PRESSURE WHICH WOULD CAUSE
DAMAGE TO WIRE STRANDS.**



**THE PROPER WRAP FOR A WIRE
APPROACHING A PIERCED TERMINAL
FROM THE TOP OR SIDE IS FOR THE
WIRE TO BE CONTACTING THREE SUR-
FACES OF THE TERMINAL.**



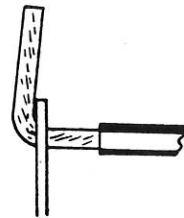
**WHEN THE WIRE APPROACHES THE
TERMINAL FROM THE FRONT OR
REAR.**



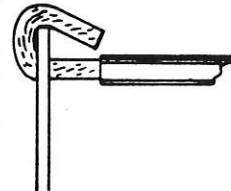
PREFORM THE WIRE INTO AN "L" CONFIGURATION. BE CERTAIN TO BEND WIRE AT PROPER LOCATION TO MAINTAIN REQUIRED INSULATION CLEARANCE.



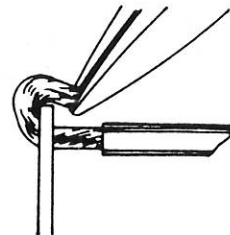
INSERT THE WIRE THROUGH THE EYE OF THE CLEAN TERMINAL.



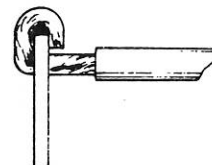
GRASP THE END OF THE WIRE WITH LONG NOSE PLIERS. WRAP WIRE OVER TOP OR SIDE OF THE TERMINAL WITH THE END OF WIRE ANGLED DOWNWARD.



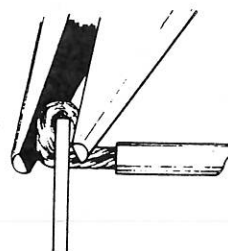
CUT OFF EXCESSIVE WIRE WITH WIRE CUTTERS, ALLOWING ENOUGH WIRE FOR A PROPER WRAP AROUND THE TERMINAL.



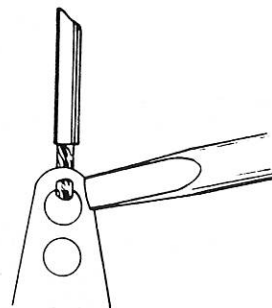
THE PROPER WRAP FOR A WIRE APPROACHING A PIERCED TERMINAL FROM THE FRONT OR REAR IS FOR THE WIRE TO BE CONTACTING ALL FOUR SURFACES OF THE TERMINAL.



TO ACHIEVE A TIGHT WRAP, GENTLY SQUEEZE THE LOOSE END OF WIRE FIRMLY TO TERMINAL USING LONG NOSE PLIERS. AVOID EXCESSIVE PRESSURE WHICH COULD CAUSE DAMAGE TO WIRE STRANDS.



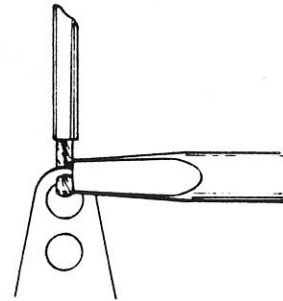
WITH WIRE OR WIRES PROPERLY IN POSITION, THE CONNECTION IS READY TO BE SOLDERED. TO SOLDER SAFELY AND QUICKLY, SELECT A SOLDERING IRON TIP THAT MATCHES THE CONNECTION TO BE SOLDERED.



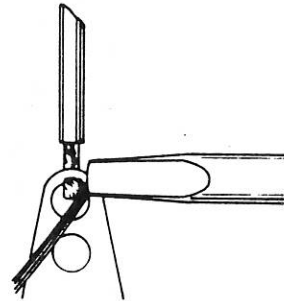
REMOVE THE SOLDERING IRON FROM THE HOLDER AND WIPE THE TIP ON A CLEAN, WET, CELLULOSE SPONGE.



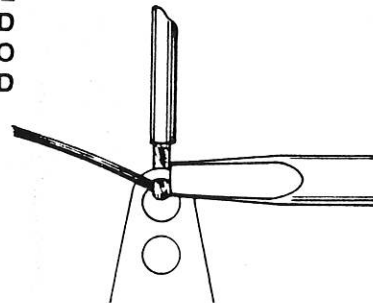
PLACE THE TIP ON THE CONNECTION
WITH MAXIMUM CONTACT TO
ACHIEVE A RAPID HEAT TRANSFER.



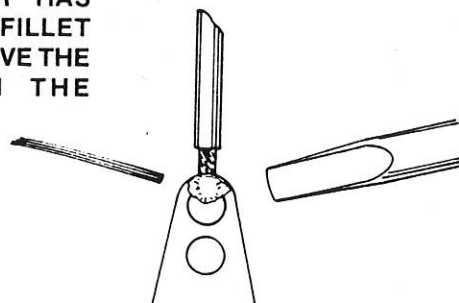
MELT A SMALL AMOUNT OF SOLDER
AT THE JUNCTION OF THE TIP AND
THE WORK TO FORM A SOLDER
BRIDGE WHICH WILL PROMOTE A
RAPID HEAT TRANSFER.



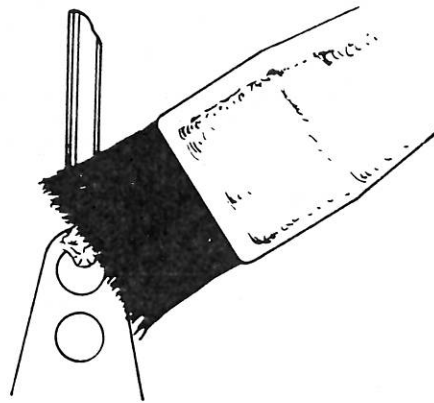
THEN IMMEDIATELY PLACE THE
SOLDER OPPOSITE THE TIP AND
ALLOW THE HEAT FROM THE TIP TO
DRAW THE MOLTEN SOLDER AROUND
THE TERMINAL.



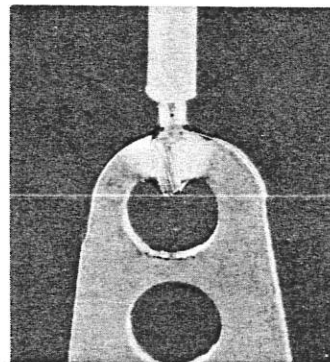
AS SOON AS THE SOLDER HAS
FORMED A CONTINUOUS FILLET
AROUND THE TERMINAL, REMOVE THE
SOLDER AND TIP FROM THE
TERMINAL.



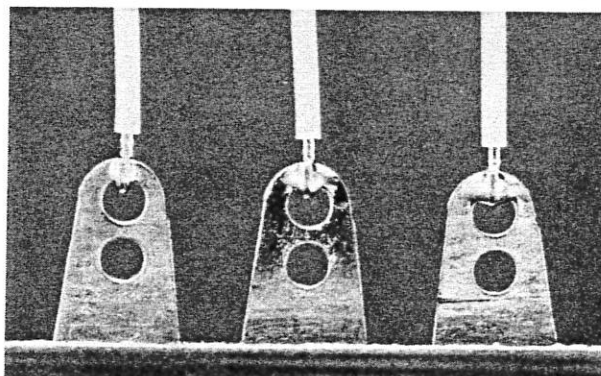
ALLOW THE CONNECTION TO SOLIDIFY AND COOL TO ROOM TEMPERATURE. REMOVE THE FLUX RESIDUE FROM THE TERMINAL WITH AN APPROVED SOLVENT AND BRISTLE BRUSH.



THE COMPLETED CONNECTION SHOULD BE SMOOTH, BRIGHT, AND SHINY, WITH THE SOLDER FLOWING AND WETTING TO THE TERMINAL. THE WIRE STRANDS SHOULD BE READILY DISCERNIBLE BENEATH THE SOLDER.



BY FOLLOWING THESE STEP-BY-STEP INSTRUCTIONS, YOU SHOULD BE ABLE TO CONSISTENTLY PRODUCE ACCEPTABLE CONNECTIONS. INSPECTION CRITERIA HAS BEEN PROVIDED WHICH ALLOWS YOU TO COMPARE YOUR WORKMANSHIP WITH INDUSTRY STANDARDS. THE CONNECTION ON THE LEFT SHOWS MINIMUM SOLDER, CENTER CONNECTION HAS THE OPTIMUM AMOUNT, AND THE RIGHT CONNECTION HAS THE MAXIMUM AMOUNT.

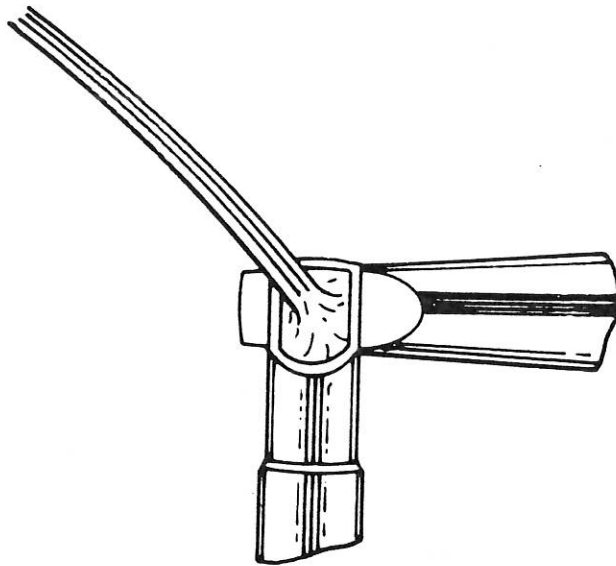


YOUR DEDICATION TO QUALITY
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NOTES

Wiring & Soldering Handbook

CUP CONNECTORS

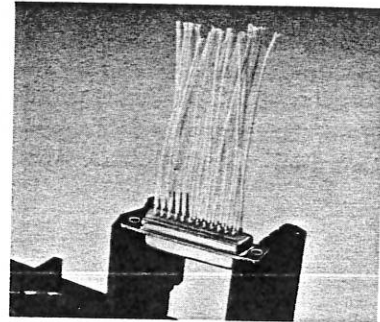


OMNI TRAINING CORP

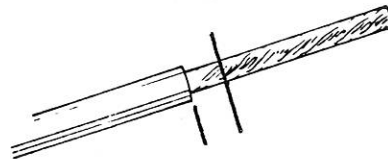
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WIRING & SOLDERING CUP CONNECTORS

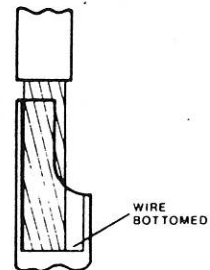
WIRED CONNECTOR ASSEMBLY



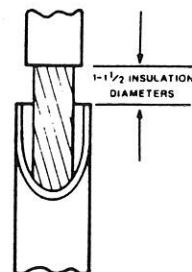
SELECT A WIRE WHICH HAS BEEN PROPERLY STRIPPED, TWISTED AND TINNED.



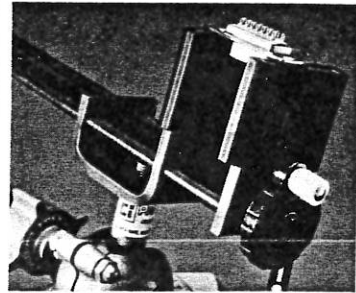
THE PROPER STRIP LENGTH PERMITS THE WIRE TO BE BOTTOMED IN THE CUP, ACHIEVING MAXIMUM CONTACT BETWEEN THE WIRE AND CUP.



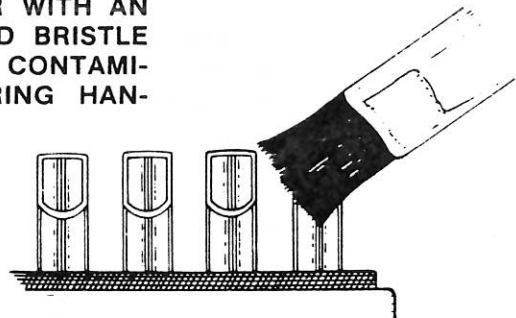
THE STRIP LENGTH SHOULD RESULT IN AN INSULATION CLEARANCE ABOVE THE TOP OF THE CUP RANGING FROM 1 TO 1½ TIMES THE INSULATION DIAMETER.



PLACE THE CONNECTOR INTO A VISE OR FIXTURE ADJUSTED TO AN ANGLE OF APPROXIMATELY 35 DEGREES. THIS HELPS PREVENT AIR OR GAS FROM BECOMING ENTRAPPED INSIDE THE CUP WHEN SOLDERING.



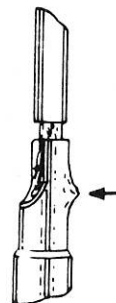
CLEAN THE CONNECTOR WITH AN APPROVED SOLVENT AND BRISTLE BRUSH TO REMOVE ANY CONTAMINANTS DEPOSITED DURING HANDLING OR STORAGE.



THE CORRECT SOLDERING TEMPERATURE FOR CUPS IS 750° TO 850° F. THIS HIGH TEMPERATURE IS REQUIRED TO HEAT THE CONNECTION QUICKLY BECAUSE A DRY SOLDERING IRON TIP MUST BE USED.



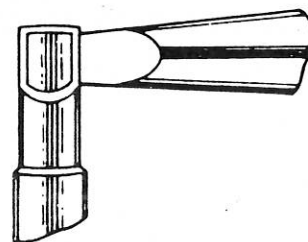
THE USE OF A DRY TIP PREVENTS EXCESSIVE SOLDER ON THE OUTSIDE OF THE CUP. EXCESS SOLDER COULD CAUSE SHORTING BETWEEN ADJACENT CUPS BECAUSE OF REDUCED CLEARANCE.



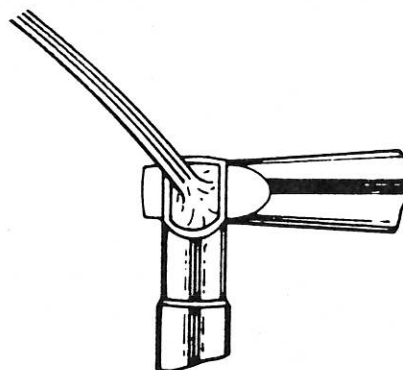
**REMOVE THE SOLDERING IRON FROM
HOLDER AND WIPE THE TIP ON A
CLEAN, WET, CELLULOSE SPONGE.**



**PLACE THE TIP AGAINST THE SIDE OR
REAR OF THE CUP, APPROXIMATELY
1/16" BELOW THE TOP. THIS TIP
LOCATION PROVIDES MAXIMUM
CONTACT TO ACHIEVE A RAPID HEAT
TRANSFER.**



**APPLY SOLDER TO THE INSIDE REAR
WALL OF THE CUP AND ALLOW IT TO
FLOW DOWN THE WALL. THIS FILLS
THE CUP FROM THE BOTTOM UP,
FORCING OUT ALL AIR AND GASES.**



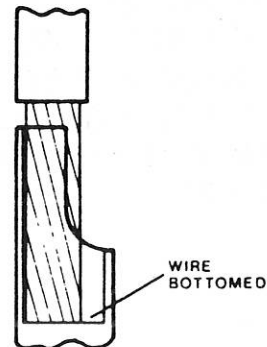
**THIS HELPS PREVENT REJECTS SUCH
AS AIR BUBBLES, VOIDS AND PIN
HOLES IN THE SOLDER CONNECTION.**



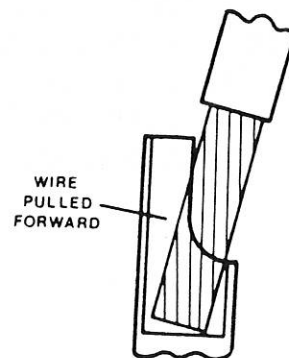
**FILL THE CUP WITH THE PROPER
AMOUNT OF SOLDER.**



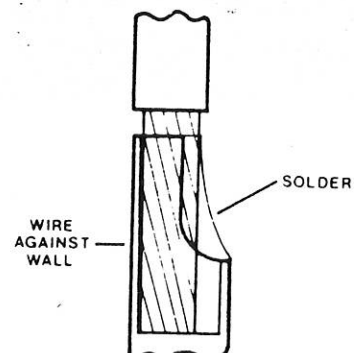
**WHILE KEEPING THE SOLDER MOLTEN,
PICK UP A PREPARED WIRE AND
INSERT IT COMPLETELY TO THE BOT-
TOM OF THE CUP. PUSH THE WIRE TO
THE REAR OF THE CUP,**



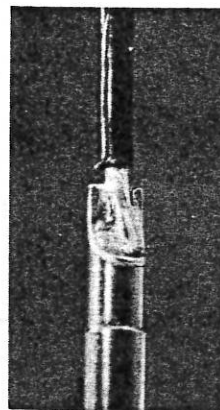
GENTLY PULL THE WIRE FORWARD.



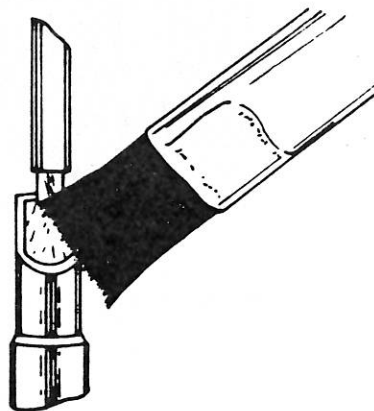
**THEN PUSH IT AGAINST THE REAR
WALL. THIS ROCKING MOTION HELPS
ELIMINATE ANY POSSIBILITY OF AIR
ENTRAPMENT.**



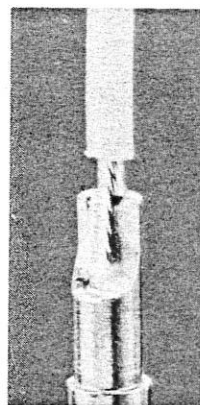
REMOVE THE TIP FROM THE CONNECTION. HOLD THE WIRE MOTIONLESS UNTIL THE SOLDER HAS COMPLETELY SOLIDIFIED. THIS PREVENTS DISTURBING THE CONNECTION.



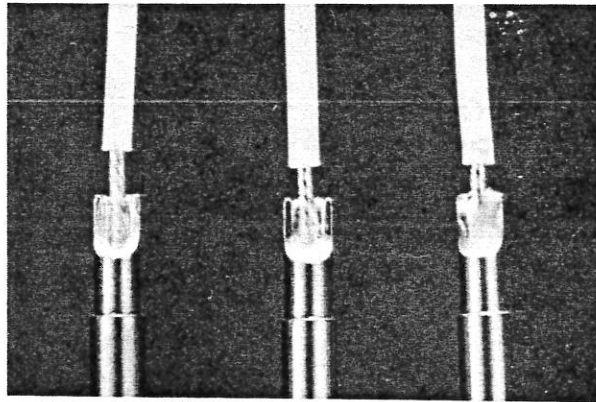
ALLOW THE CONNECTION TO COOL TO ROOM TEMPERATURE. REMOVE THE FLUX RESIDUE FROM THE CUP WITH AN APPROVED SOLVENT AND BRISTLE BRUSH.



THE COMPLETED CONNECTION SHOULD BE SMOOTH AND SHINY WITH NO VOIDS, PITS OR AIR BUBBLES. THE WIRE WILL BE BOTTOMED IN THE CUP AND BE TOUCHING THE REAR WALL FOR ITS ENTIRE LENGTH.



BY FOLLOWING THESE STEP-BY-STEP INSTRUCTIONS, YOU SHOULD BE ABLE TO CONSISTENTLY PRODUCE ACCEPTABLE SOLDER CONNECTIONS. INSPECTION CRITERIA HAS BEEN PROVIDED WHICH ALLOWS YOU TO COMPARE YOUR WORKMANSHIP WITH INDUSTRY STANDARDS. THE CONNECTION ON THE LEFT SHOWS MINIMUM SOLDER, CENTER CONNECTION HAS THE OPTIMUM AMOUNT AND THE RIGHT CONNECTION HAS THE MAXIMUM AMOUNT.

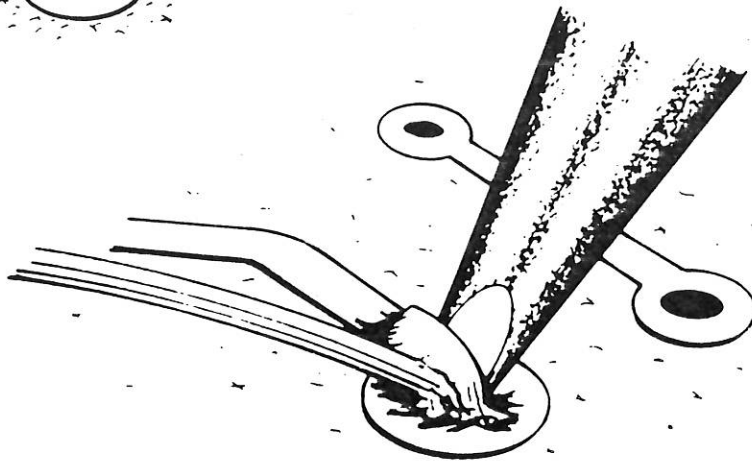
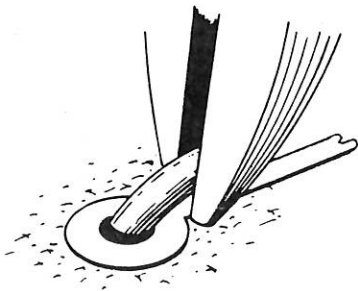


YOUR DEDICATION TO QUALITY WORKMANSHIP REFLECTS THE QUALITY OF THE PRODUCTS YOUR COMPANY MANUFACTURES.

NOTES

Wiring & Soldering Handbook

PRINTED WIRING BOARDS

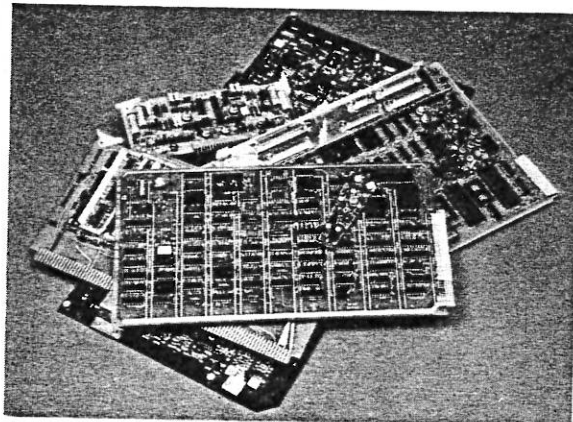


OMNI TRAINING CORP

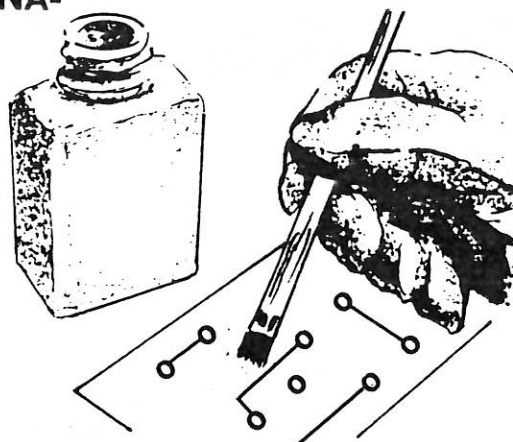
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WIRING & SOLDERING PRINTED WIRING BOARDS

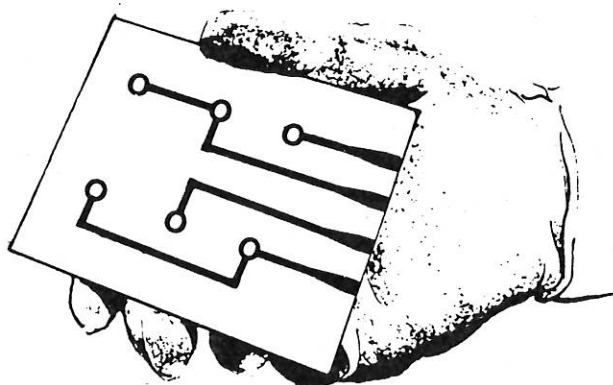
ASSORTMENT OF
PRINTED WIRING BOARDS



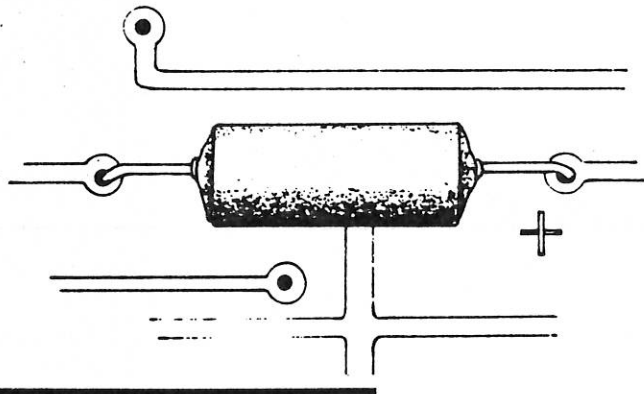
PRIOR TO INSTALLING COMPONENTS ON PRINTED WIRING BOARDS, CLEAN THE BOARD WITH AN APPROVED SOLVENT AND BRISTLE BRUSH TO REMOVE ANY SURFACE CONTAMINATION.



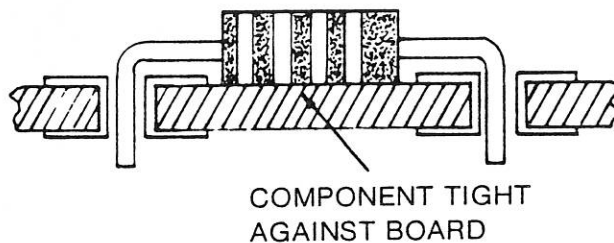
ONCE THE BOARD HAS BEEN CLEANED, DO NOT TOUCH ANY OF THE AREAS THAT ARE TO BE SOLDERED. HANDLE THE BOARD BY ITS EDGES OR WEAR GLOVES OR FINGER COTS TO PREVENT ANY FURTHER CONTAMINATION.



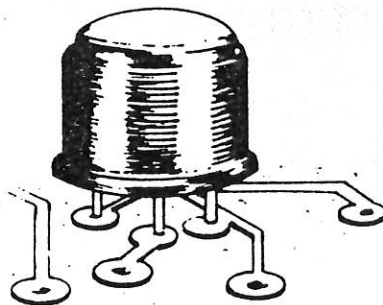
PLACE THE CLEANED BOARD INTO A BENCH VISE OR FIXTURE. SELECT A PROPERLY PREPARED COMPONENT AND INSERT IT INTO THE CORRECT HOLES IN THE BOARD OBSERVING POLARITY OR ACCEPTABLE MOUNTING TECHNIQUES.



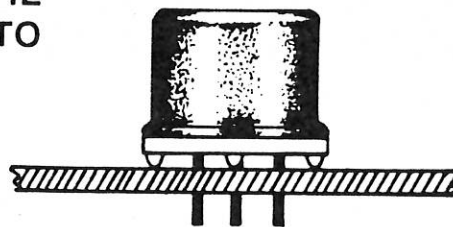
WHEN INSTALLING AXIAL LEAD COMPONENTS SUCH AS RESISTORS AND CAPACITORS, UNLESS OTHERWISE SPECIFIED, SEAT THEM TIGHTLY AGAINST THE BOARD TO PREVENT UNDUE STRESS TO THE COMPONENT OR SOLDER CONNECTION.



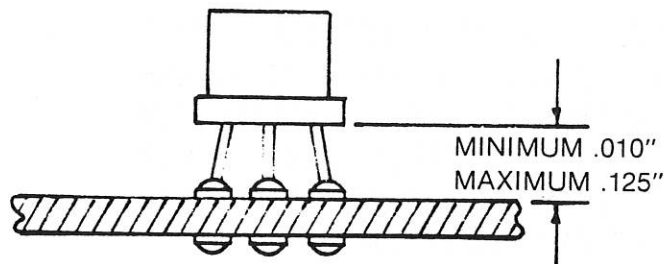
NON-AXIAL LEAD COMPONENTS SUCH AS TRANSISTORS MUST BE MOUNTED OFF THE BOARD AS THEIR METALLIC BODIES COULD SHORT OUT TO THE CIRCUITRY BELOW.



TRANSISTORS MAY BE INSTALLED USING A SEPARATE SPACER TO ELEVATE THE COMPONENT BODY. WHEN A SPACER IS USED, THE COMPONENT BODY MUST BE TIGHT TO THE SPACER, AND THE SPACER TIGHT TO THE BOARD.



IF SPACERS ARE NOT USED, THE COMPONENT BODY SHOULD BE MOUNTED AT LEAST .010" MINIMUM TO A MAXIMUM OF .125" ABOVE THE BOARD.



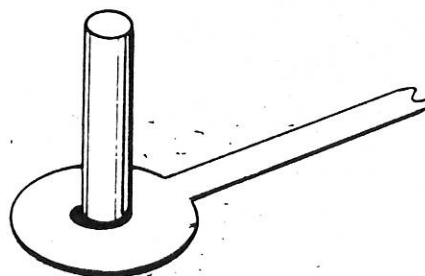
AFTER INSTALLATION, THE COMPONENT LEADS MUST BE PROPERLY TERMINATED. THE MOST COMMONLY USED TERMINATIONS ARE: CLINCHED STUD, AND LAP.

CLINCH

STUD

LAP

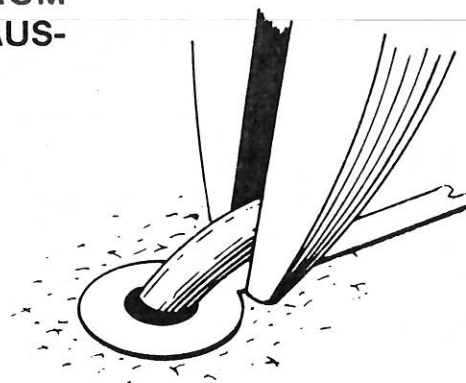
TO ACCOMPLISH PROPER LEAD CLINCHING, INSERT THE COMPONENT LEAD THROUGH THE HOLE.



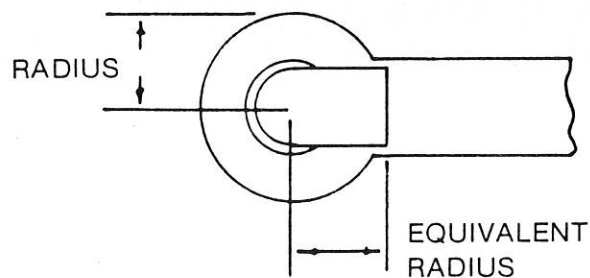
BEND THE LEAD OVER PARTIALLY, USING A NON-METALLIC SOLDERING AID. WHEN THERE IS A CIRCUITRY ATTACHED TO THE PAD, THE LEAD SHOULD ALWAYS BE BENT IN THE DIRECTION OF THE CIRCUITRY.



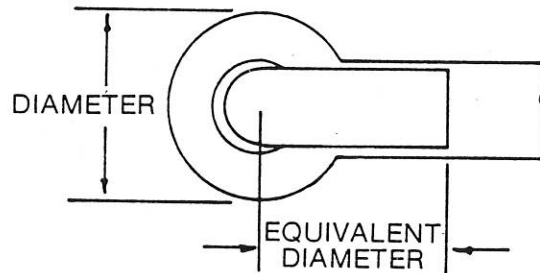
CUT OFF THE EXCESSIVE LEAD LENGTH, MAINTAINING CLINCH LENGTH REQUIREMENTS. CAREFULLY PREVENT THE CUTTER TIPS FROM CONTACTING THE BOARD AND CAUSING BOARD SURFACE DAMAGE.



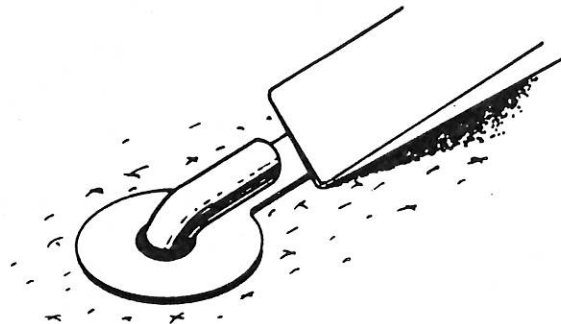
AFTER CLINCHING, THE SHORTEST THE LEAD SHOULD BE IS TO THE EDGE (RADIUS) OF THE PAD.



MAXIMUM LEAD LENGTH IS EQUAL TO THE DIAMETER OF THE PAD. DIAMETER IS THE MAXIMUM WIDTH OF THE PAD. THIS DISTANCE IS THEN MEASURED FROM THE CENTER OF THE HOLE IN THE DIRECTION OF THE ATTACHED CIRCUITRY TO DETERMINE MAXIMUM CLINCH LENGTH.



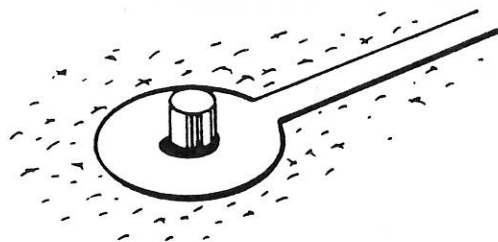
COMPLETE THE CLINCHING OPERATION USING A NON-METALLIC SOLDERING AID, INSURING LEAD IS PRESSED DOWN TIGHTLY TO THE PAD OR ATTACHED CIRCUITRY.



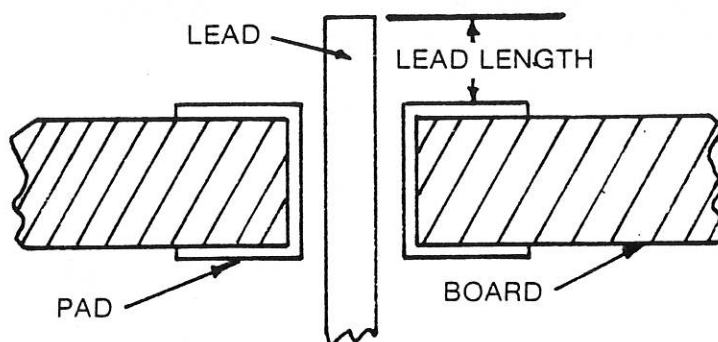
THE LEAD SHOULD REMAIN OVER THE PAD OR ATTACHED CIRCUITRY AND NEVER EXTEND OVER THE BOARD ITSELF, AS THIS WOULD REDUCE CLEARANCE BETWEEN METALLIC, CURRENT CARRYING PARTS POSSIBLY CAUSING SHORTING BETWEEN ADJACENT CIRCUITRY.



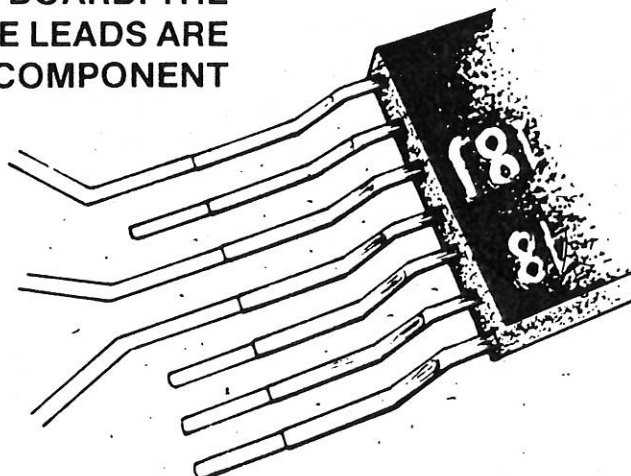
STUD TERMINATED LEADS EXTEND STRAIGHT THROUGH THE HOLE IN THE BOARD WITHOUT BEING BENT AND ARE USED PRIMARILY ON DOUBLE SIDED BOARDS HAVING PLATED THROUGH HOLES.



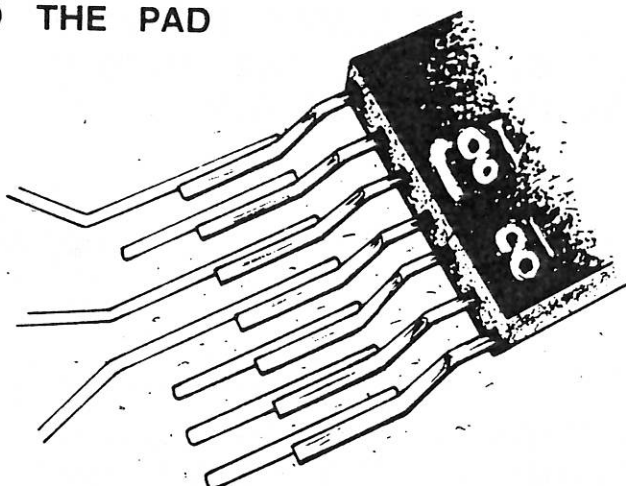
ONCE THE LEAD IS INSERTED INTO THE BOARD, CUT IT TO THE PROPER LENGTH WHICH IS $1/32''$ MINIMUM TO A MAXIMUM OF $1/16''$.



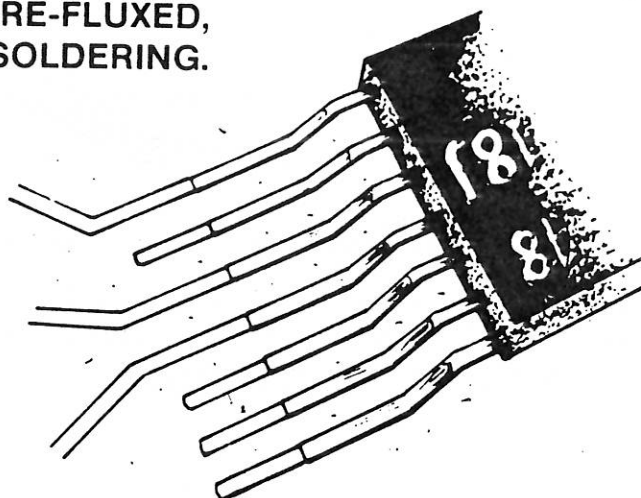
THE LEADS OF LAP TERMINATED COMPONENTS ARE NOT INSERTED THROUGH HOLES IN THE BOARD. THE CIRCUITRY TO WHICH THE LEADS ARE ATTACHED IS ON THE COMPONENT SIDE OF THE BOARD.



WHEN MOUNTING LAP TERMINATED COMPONENTS SUCH AS FLAT PACKS, BOTH THE LEADS AND THE PAD AREAS ARE PRE-TINNED.



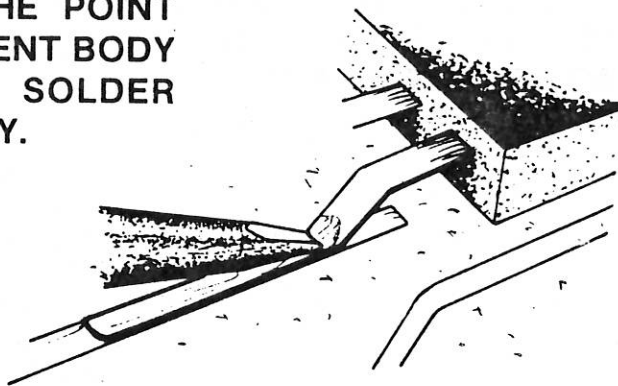
THE COMPONENT IS PROPERLY POSITIONED ON THE BOARD, PRE-FLUXED, AND HELD IN PLACE FOR SOLDERING.



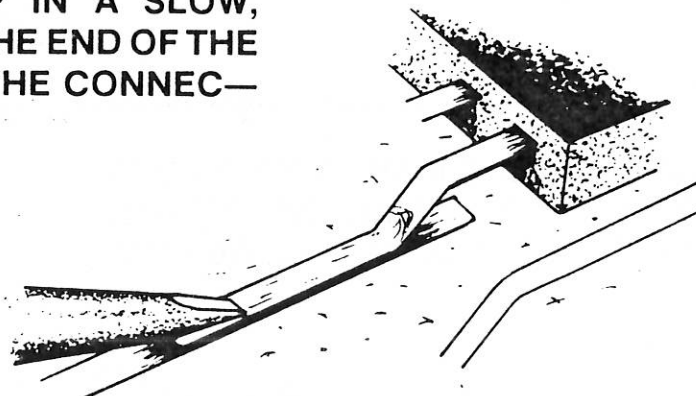
REMOVE THE SOLDERING IRON FROM HOLDER, AND WIPE THE TIP ON A CLEAN, WET CELLULOSE SPONGE.



PLACE THE PROPERLY SIZED TIP ON TOP OF THE LEAD AT THE POINT CLOSEST TO THE COMPONENT BODY TO BE SOLDERED. THE SOLDER SHOULD MELT IMMEDIATELY.



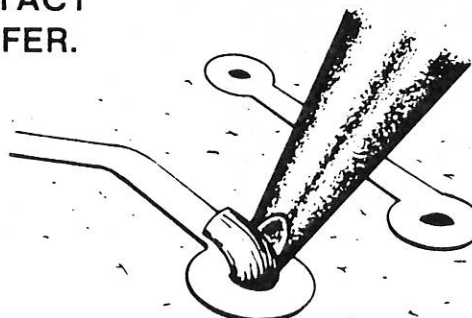
THEN, DRAW THE TIP IN A SLOW, SMOOTH MOTION TO THE END OF THE LEAD AND THEN OFF THE CONNECTION.



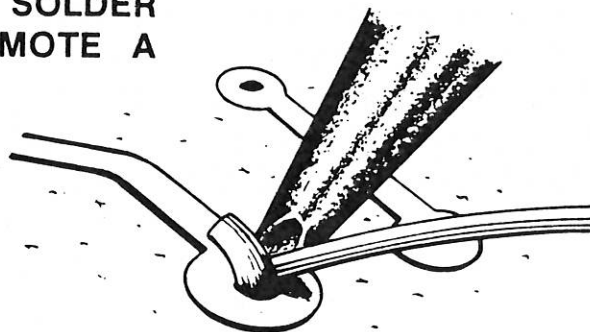
TO SOLDER CLINCHED AND STUD TERMINATIONS, WIPE THE TIP ON A CLEAN, WET, CELLULOSE SPONGE.



PLACE THE TIP AGAINST THE PAD AND THE LEAD WITH MAXIMUM CONTACT TO ACHIEVE RAPID HEAT TRANSFER.



MELT A SMALL AMOUNT OF SOLDER AT THE JUNCTION OF THE TIP AND THE WORK TO FORM A SOLDER BRIDGE WHICH WILL PROMOTE A RAPID HEAT TRANSFER.



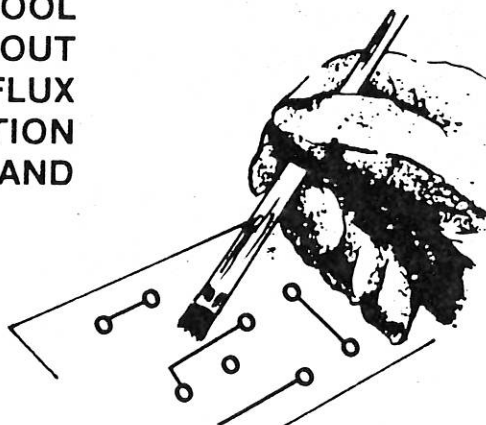
IMMEDIATELY MOVE THE SOLDER TO THE SIDE OF THE LEAD OPPOSITE THE TIP AND APPLY THE PROPER AMOUNT OF SOLDER. ALLOW THE HAT OF THE TIP TO DRAW THE MOLTEN SOLDER TOWARD THE TIP, AND FLOW THROUGHOUT THE CONNECTION. BE CERTAIN TO COVER THE BARE END OF THE WIRE WITH SOLDER.



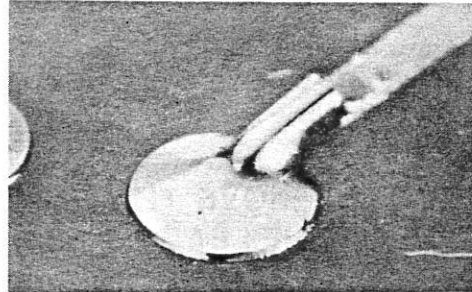
REMOVE THE TIP FROM THE CONNECTION. THE TIP SHOULD NEVER CONTACT THE WORK MORE THAN ONE TO THREE SECONDS TO PREVENT THE POSSIBILITY OF OVERHEATED CONNECTIONS OR BOARD DAMAGE.



ALLOW THE CONNECTION TO COOL TO ROOM TEMPERATURE WITHOUT DISTURBING IT. REMOVE THE FLUX RESIDUE FROM THE CONNECTION USING AN APPROVED SOLVENT AND BRISTLE BRUSH.



THE FINISHED SOLDER CONNECTION SHOULD BE SMOOTH, BRIGHT AND SHINY. THE SOLDER SHOULD COVER THE ENTIRE LEAD AND THE LEAD SHOULD BE DISCERNIBLE BENEATH THE SOLDER. THE SOLDER SHOULD FORM CONCAVE FILLETS WHICH FEATHER DOWN TO THE EDGE OF THE PAD.



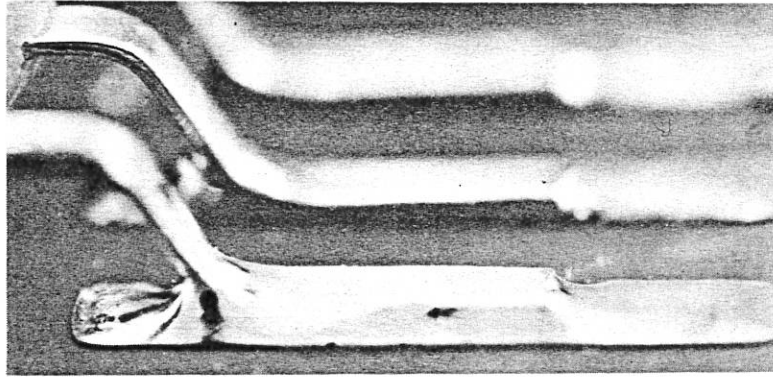
ON THE TOP SIDE OF THE BOARD, THE SOLDER SHOULD FORM A SLIGHT FILLET ABOVE THE BOARD SURFACE. DO NOT FILL THE BEND RADIUS WITH SOLDER. THIS WOULD RESULT IN LOSS OF REQUIRED COMPONENT LEAD STRESS RELIEF.



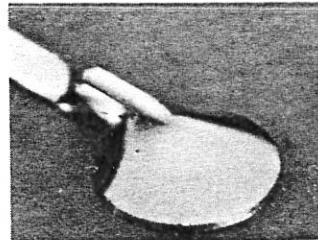
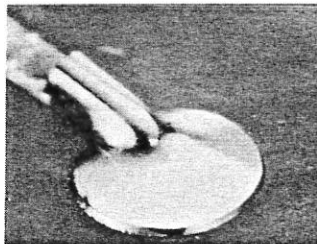
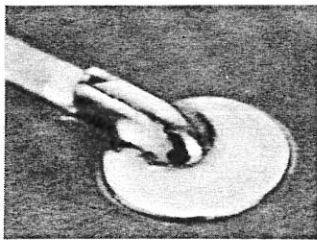
BY FOLLOWING THESE STEP BY STEP INSTRUCTIONS YOU SHOULD BE ABLE TO PRODUCE ACCEPTABLE SOLDER CONNECTIONS.

INSPECTION CRITERIA HAS BEEN PROVIDED WHICH ALLOWS YOU TO COMPARE YOUR WORKMANSHIP WITH INDUSTRY STANDARDS.

**THIS LAP CONNECTION SHOWS THE
OPTIMUM AMOUNT OF SOLDER.**



**THE CLINCHED CONNECTION ON THE
LEFT SHOWS MINIMUM SOLDER, CEN-
TER CONNECTION HAS THE OPTIMUM
AMOUNT AND RIGHT CONNECTION
HAS THE MAXIMUM AMOUNT.**



**THE STUD CONNECTION ON THE LEFT
SHOWS MINIMUM SOLDER, CENTER
CONNECTION HAS THE OPTIMUM
AMOUNT AND THE RIGHT CONNEC-
TION HAS THE MAXIMUM AMOUNT.**



**YOUR DEDICATION TO QUALITY
WORKMANSHIP REFLECTS THE
QUALITY OF THE PRODUCTS YOUR
COMPANY MANUFACTURES.**

NOTES
